
Sponsors

University of Minnesota

College of Veterinary Medicine

College of Agricultural, Food and Environmental Sciences

Extension Service

Swine Center

Editors

W. Christopher Scruton

Stephen Claas

Layout

David Brown

Logo Design

Ruth Cronje, and Jan Swanson;

based on the original design by Dr. Robert Dunlop

Cover Design

Shawn Welch

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, or sexual orientation.

Orchestrating financial soundness in a noisy health world

Mike Mohr, DVM, MBA

Managing expectations regarding health and production is our job in today's pork production system. Matching Wall Street, Main Street, and Our Street by definition is noisy, chaotic, and downright difficult.

Yet it is this mix of music—i.e., finding positive solutions that all parties can accept—with which we are charged. Here is our song.

Our noisy world

In trying to understand our noisy world we chose to listen to the sounds of the streets to identify the many aspects of pig production health.

Our first step was to identify our health objectives. Here are our questions:

- What is the primary pathogen causing disease?
- What are the concurrent diseases and are there any complicating interactions?
- What is the timing of the various diseases?
- What is the disease load that we are experiencing?
- Is the health solution to have a long-term or short-term gain focus?

By definition we are taught that our charge is to make all the animals healthy. This may not be the case given the many constraints the system imposed. Constraints that we found were:

- The health status of our gilts . . . we had to take them or have none.
- The boar stud health status changes over time and . . . we had to take them or have none.
- The skill level of our team is not consistent or uniform.
- The system is very complex with many moving parts, all driving at reducing cash costs.
- Facilities were not very sophisticated and thus left production subject to the stresses of excessive weather variables.
- The genetic capacity of disease resistance was sub-optimal in some flows.

- The combined constraints of environmental management, animal welfare and political folly at times blocked the best of plans.

A great deal of systematic noise came from our pig flow program. It is very challenging to maintain consistent health flow given:

- changing gilt flows;
- changing boar studs;
- using PRRS-positive and viremic gilts and semen on a consistent basis;
- continuous flow production schemes,; and
- multiple pig movements enacted to cope with environmental management challenges.

Finally, an understanding and application of basic biosecurity principles is necessary to execute the new intervention strategies. Finding out how washing, transportation, PQA, and low water washing systems are conducted helps us to understand not only the presence, but also the involvement, of various pathogens in the system.

The orchestra conductor

After understanding the noise in our system, we set out to develop a framework that would help us match accountability for our health decisions with the desired outcomes. This framework would account not only for the assessment of the current economic impact of disease in the system or flow but also track intervention costs incurred in formulating the health solution. The overall goal was to balance risk with reward in a way that produced predictable health outcomes.

Making music out of madness

Data mining was our first step to solving the mayhem. Decision support systems were created to turn data into a living, breathing business intelligence system.

Our next step was to make sure that our newly created business intelligence system was correct. In this step, the knowledge and expertise of the skilled veterinary practitioner and diagnostician are employed. Marrying these

two steps yielded profound knowledge in not only understanding what is going on with the health status, but more importantly what is not and what could be going on with the health status.

Once a satisfying knowledge of the system's health status was attained, the next step was to listen to the production process. This was accomplished by charting production parameters in a statistical process control chart to understand statistically when production signals occurred. Association mathematics were then applied between these signals and to the farm's event log to establish solid cause and effect relationships.

Next, intervention costs needed to be calculated, tracked, and audited in order to determine the best return on investment given the intervention strategy employed.

Developing an economic model then becomes a matter of bringing together a mix of disease quantification, associated production SPC signals, and outcome expectations given the health investment.

Playing our first song

Our economic model is just learning to assist our business intelligence system. We have learned a lot with this process . . . some the hard way. We hope to find easier methods in the future and look forward to the day when the question "Will this intervention strategy pay off for us?" be music to our analytical ears.

